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# THE MUSICAL TIMES, And Singing Class Circular.

OCTOBER 1st, 1860.

## NEW INSTRUMENTS,

By HECTOR BERLIOZ.\*

THE Author of this work is doubtless not obliged to mention the multitude of attempts of all kinds daily made by instrument-makers, and their pretended inventions, more or less disastrous, nor to make known the futile specimens which they seek to introduce amidst the race of instruments. But he should signalize and recommend to the attention of composers, those admirable discoveries made by ingenious artists; particularly when the excellent result of these discoveries has been generally recognized, and when their appreciation is already a thing achieved, in musical performance throughout a portion of Europe. These producers are, moreover, of small number; and Messrs. Adolphe Sax, and Alexandre, rank at the head of them.

M. Sax—whose labours will first occupy our attention—has brought to perfection (as I have already remarked here and there in the course of this work) several ancient instruments. He has, besides, supplied many voids existing among the family of brass instruments. His principal merit, however, is the creation of a new family, complete since a few years only;—that of the instruments with a single reed, with a clarinet mouth-piece, and in brass. These are SAXOPHONES. These new voices given to the orchestra, possess most rare and precious qualities. Soft and penetrating in the higher part, full and rich in the lower part, their medium has something profoundly expressive. It is, in short, a quality of tone *sui generis*, presenting vague analogies with the sounds of the violoncello, of the clarinet and corno inglese, and invested with a brazen tinge which imparts a quite peculiar accent. The body of the instrument is a parabolic cone of brass, provided with a set of keys. Agile,—fitted for the execution of passages of a certain rapidity, almost as much as for cantilena passages,—saxophones may figure with great advantage in all kinds of music; but especially in slow and soft pieces.

The quality of tone of the high notes of low saxophones, partakes something of painful and sorrowful; while that of their bass notes, is, on the contrary, of a calm grandeur, so to speak, pontifical.

All of them,—the bariton, and the bass, principally—possess the faculty of swelling and diminishing their sound; whence results,—in the lower extremity of their scale,—effects hitherto unheard, and quite peculiar to themselves, at the same time

bearing some resemblance to those of the expressive organ. The quality of tone of the high saxophone is much more penetrating than that of clarinets in *Bb* and in *C*, without having the piercing and often shrill brilliancy of the small clarinet in *E♭*. As much may be said of the soprano. Clever composers will hereafter derive wondrous effects from saxophones associated with the clarinet family, or introduced in other combinations which it would be rash to attempt foreseeing. This instrument is played with great facility; its fingering proceeding from the fingering of the flute and from that of the hautboy. Clarinet-players, already familiar with the mouth-piece, render themselves masters of its mechanism in a very short time.

Saxophones are six in number:—the high, the soprano, the alto, the tenor, the baritone, and the bass saxophone,

M. Sax is about to produce a seventh,—the double-bass saxophone.

The compass of each of them is nearly the same; and here is their scale, written for all on the G cleff, like that of clarinets, after the system proposed by M. Sax, and already adopted by composers.

With the chromatic intervals.

High Saxophone in *E♭*.

Real sounds.

With the chromatic intervals.

Soprano Saxophone in *C*, or in *B♭*.

Real sounds of the Saxophone in *B♭*.

With the chromatic intervals.

Alto Saxophone in *F*, or in *E♭*.

Effect of the Saxophone in *F*. That in the key of *E♭* is a note lower.

With the chromatic intervals.

Tenor Saxophone in *C*, or in *B♭*.

Effect of the Tenor Saxophone in *C*. That in the Key of *B♭* is a note lower.

With the chromatic intervals.

Baritone Saxophone in *F*, or in *E♭*.

Effect of the Baritone Saxophone in *F*. That in the key of *E♭* is a note lower.

The musical notation consists of six pairs of staves. Each pair represents a different saxophone. The top staff of each pair shows a scale with chromatic intervals (half steps) between notes, starting from a G-clef. The bottom staff shows the 'real sounds' or the effect of the instrument in a specific key, often showing a key signature change (e.g., one sharp for F major or two flats for Bb major) to illustrate the difference in timbre or pitch perception compared to the chromatic scale.

\* Reprinted from *Berlioz on Modern Instrumentation and Orchestration* (by permission).

With the chromatic intervals.

Bass Saxophone in C, or in B♭

Effect of the Bass Saxophone in C. That in the key of B♭ is a note lower.

Major and minor shakes are practicable on almost all the extent of the chromatic scale of the saxophone. Here are those which it is well to avoid:—

M. Sax has also produced the family of sax-horns, of saxotrombas, and of sax-tubes,—brass instruments with a wide mouth-piece; and with a mechanism of three, four, or five cylinders.

#### Sax-Horns.

Their sound is round, full, pure, equal, resounding, and of a perfect homogeneousness throughout all the extent of the scale. The changing keys of the sax-horn proceed, like those of the cornet à pistons, by descending; commencing from the typical instrument, the *small very-high sax-horn in C*, which is at an octave above the cornet in C. The custom has obtained in France of writing all these instruments—as well as saxotrombas and sax-tubas, the lowest and the highest—on the G cleff, as horns are written; with this difference only, that if, for the horn in low C, we have to represent the real sound an octave below the note written on the G cleff, we must—for certain very low instruments of Sax—represent it two octaves below.

Small very high Saxhorn, in C, or in B♭

With the chromatic intervals.

Effect of the small very high Saxhorn in C. That in the key of B♭ is a note lower.

Very difficult in the key of C.

The extreme lower notes are of rather a bad quality of tone, and this instrument should rarely be employed beneath the low A. But there is nothing more brilliant, more neat, more devoid of shrillness—notwithstanding their vivid appeal,—than all the notes of the latter octave. This quality of tone is besides so clear and so penetrating, that it allows a single very-high sax-horn to be distinguished through a considerable mass

of other wind instruments. The very-high sax-horn in B♭ is more used than the one in C; and although it is a note lower than the other, there is already much difficulty—or at least much care—for the performer to bring out the two last sounds:—

Real sounds.

In B♭

It requires, therefore, to be very sparing of these precious notes, and to introduce them with skill.

Soprano Saxhorn in E♭. A fifth below the preceding, in B♭.

With the chromatic intervals.

Effect.

Commencing with the soprano sax-horn in E♭, we will no longer indicate the first low note of the tube's resonance. It is too bad to be employed.

We will merely forewarn composers that, if they indicate an instrument *with four cylinders*, the chromatic compass of the low part of this instrument no longer stops at the F♯, but goes down to the first C,

Alto Saxhorn in B♭. A fourth below the preceding.

Chromatically.

Effect.

Tenor Saxhorn in E♭. A fifth below the preceding.

Chromatically.

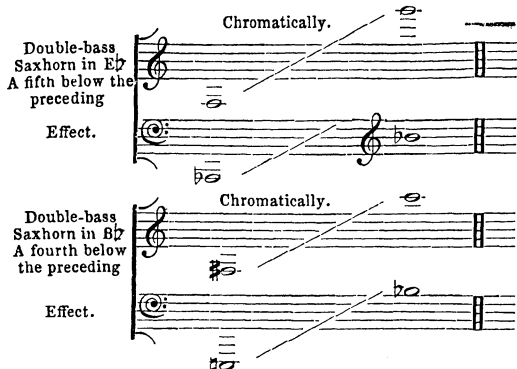
Effect.

Baritone Saxhorn, and Bass Saxhorn in B♭. A fourth below the preceding.

Chromatically.

Effect.

These two sax-horns,—the baritone and bass,—have the same compass in the high part of the instrument. The tube is only rather smaller for the baritone. The bass, which has almost always four cylinders, has a tube somewhat wider, which allows of its descending lower and more easily.



There are, moreover, the low double-bass saxhorn in  $E\flat$ , and the drone sax-horn in  $B\flat$ , which are at an octave below the two preceding; but of which only the medium notes should be employed in a moderate movement.

#### *Saxotrombas.*

These are brass instruments with mouth-piece, and with three, four, or five cylinders, like the preceding. Their tube being more contracted, gives to the sound which it produces, a character more shrill,—partaking at once of the quality of tone of the trumpet and of that of the bugle.

The number of the members of the family of saxotrombas equals that of sax-horns. They are disposed in the same order, from high to low; and possess the same compass.

#### *Sax-Tubas.*

These are instruments with mouth-piece and a mechanism of three cylinders; they are of enormous sonorosity, carrying far, and producing extraordinary effect in military bands intended to be heard in the open air.

They should be treated exactly like sax-horns; merely taking into account the absence of the low double-bass in  $E\flat$ , and of the drone in  $B\flat$ .

Their shape—elegantly rounded—recalls that of antique trumpets on a grand scale.

#### *The Concertina.*

This is a small instrument, with plates of brass put into vibration by a current of air. The accordion, which for some years was a musical toy, formed the groundwork of the concertina; and subsequently, that of the melodium. The sound of the concertina is at once penetrating and soft; notwithstanding its weakness, it carries tolerably far: it allies itself well with the quality of tone of the harp, and with that of the pianoforte. Still more so, it unites with the sound of the melodium, which is now the head of its family. But there would be little advantage in causing such an association; since the melodium has a quality of tone analogous to that of the concertina, produces the same effects, and moreover possesses many others which the concertina does not possess.

The concertina is a kind of small elastic box; which is held horizontally between both hands. It is played by means of knobs, pressed with the points of the fingers, and which, raising a valve, cause to pass over the plates or reeds of brass, the

column of air supplied by a bellows placed between the two sides of the box. These sides are formed by two tablets: which hold, on the outside, the key-board of knobs; and, on the inside, the vibrating plates. The bellows, having no valve, can only fill and empty itself by means of the set of reed-valves, which in-spire and ex-pire, each in turn, the air necessary for the vibration of the reeds.

The concertina has its small family complete; independently of its relationship with the melodium. There is the bass concertina, the alto, and the soprano. The bass concertina has the compass of the violoncello; the alto, that of the viola; and the soprano, that of the violin. The soprano concertina is almost the only one used.

We will presently give the compass of the concertina; which the popularity that it has acquired in England has caused to be called the English concertina.

It will be perceived,—in these two chromatic scales (one of which represents the notes of the left tablet, and the other those of the right tablet),—that the maker of the English concertina has established, in the three first octaves, enharmonic intervals between the  $A\flat$  and the  $G\sharp$ , and between the  $E\flat$  and the  $D\sharp$ , giving a little more elevation to the  $A\flat$  than to the  $G\sharp$ , and to the  $E\flat$  than to the  $D\sharp$ : thus conforming to the *doctrine* of the acousticians,—a doctrine entirely contrary to the *practice* of musicians.

This is a strange anomaly.

It is very evident that the concertina, being an instrument with fixed sounds, like the pianoforte, the organ, and the melodium, should, like these instruments, be tuned according to the law of temperament.

In its present state, its enharmonic notes in fact prevent it from being played with a pianoforte, with an organ, or with a melodium, without producing discords when the musical phrase or the harmony introduce unisons between the enharmonic  $A\flat$ s or the  $G\sharp$ s, the  $E\flat$ s or the  $D\sharp$ s, of the concertina, and these same notes tempered on the other instrument; since the  $A\flat$  and the  $G\sharp$ , as well as the  $E\flat$  and the  $D\sharp$ , are identical on the instruments tuned in temperament, while they are not so on the concertina; and that neither the one nor the other of the enharmonic sounds ( $A\flat$  and  $G\sharp$  of the concertina) will be in strict unison with the  $A\flat$  or the  $G\sharp$  of the tempered instrument, which preserves the middle between the two sounds of the concertina. Moreover, the effect of this disposition of a portion of the scale will be still more frightful, if the concertina play a duet with an instrument having moveable sounds, such as the violin; musical practice, musical sense, the ear, in short, of all people with whom modern music is cultivated, establishing that, in certain cases, those notes called "*leading*," obedient to the attraction exercised over them by their *upper tonic*, and the *minor sevenths and ninths*, obedient to the attraction

of the upper note upon which they make their resolution, the first, the leading note, may become slightly sharper than it would be in the tempered scale, and the second slightly flatter.



The G# (*too flat*) of the concertina could not, then, be in tune with the G# (*too sharp*) of the violin; nor the A♭ (*too sharp*) of the one, with the A♭ (*too flat*) of the other: each of the performers, obeying two diametrically opposite laws (the law of the calculation of vibrations, and the musical law), if the violinist, yielding to the necessity of effecting strict unison, did not play in such a manner as to assimilate with the sound (whatever it might be) of the instrument having fixed intonations,—and in consequence really false. This takes place even—in less proportions, and without hurting the ear,—unconsciously with violins, when these latter play with the pianoforte and other tempered instruments. But the fantastic proceeding, which should reconcile the system of the English concertina, with the musical system of ascending leading notes, and descending sevenths, would consist in adopting the exact reverse of the acoustician's opinion on the enharmonics, by employing the A♭ in place of the G#, and vice-versa. The violin executing then this passage musically,—



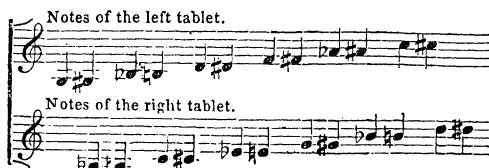
would find itself nearly in unison with the concertina executing the same passage written in this absurd way,—



This ancient endeavour of the acousticians to introduce at all risks the results of their calculations into the practice of an art, *based especially on the study of the impressions produced by sounds upon the human ear*, is no longer maintainable now-a-days.

So true is it, that Music rejects it with energy; and can only exist by rejecting it.

Omitting the long digression which will be found printed at pages 236-7 of the English edition of my book on orchestration, I return to the English concertina; of which this is the barbarous scale:—



The concertina, notwithstanding the disposition of the preceding example, is written on a single line, and on the G clef. The shake is practicable on all the notes of the scale; less easily, however, in the lower extremity. The double shake (in thirds) is easy.

Diatonic and chromatic passages, or arpeggios, of tolerable rapidity, may be executed on this instrument.

It is possible to add to the principal part,—if not several other complicated parts, as on the pianoforte and organ,—at least a second part proceeding nearly parallelly with the melody, and struck chords of four to six notes, or richer still:—



The German concertina—much used also in England—is not constructed on the system of the preceding. Its scale, which extends farther below (it goes down to C and B♭),

contains no enharmonic interval. It is consequently constructed according to the law of temperament.

The compass of concertinas varies with the number of keys, knobs, or stops, given to them; and this number changes according to the caprice of the makers. Finally, this instrument—like the guitar—requires, that the composer who would turn it to advantageous account, should have a knowledge of its mechanism, and be able to play it himself, more or less well.

#### THE WORCESTER MUSICAL FESTIVAL.

ON Tuesday the 11th of September, this Festival was inaugurated by a performance of the first part of Haydn's "Creation," in which the most marked feature was the singing of Madame Clara Novello, whose voice told wonderfully in "The Marvellous Work," and "With verdure clad." The choruses went well, "The Heavens are telling" bringing the selection to a fine close. After a few minutes' pause, Mendelssohn's oratorio of "St. Paul" commenced, and did not conclude till four o'clock. The general execution was entitled to commendation—principals, band, and chorus alike exerting themselves to do justice to the great work. Mesdames Clara Novello and Rudersdorff divided the soprano music; M<sup>me</sup>. Sainton-Dolby and Miss Wells were the contralti; Mr. Sims Reeves alone sustaining the tenor part, and Signor Belletti the bass, assisted by Mr. Briggs, one of the lay-clerks of the Cathedral. At the miscellaneous concert in the evening, Professor Bennett's "May Queen" was performed, and

(Continued on page 355.)